

Application No. 10/591,622
Amendment Dated December 27, 2011
Reply to Office Action Dated September 27, 2011

Remarks

Claims 1-21 are pending.

Claims 1-21 stand rejected.

Claim 1 is amended.

Claims 22-23 are added.

Claims 1-23 are submitted herein for review.

No new matter has been added.

In the Office Action of September 27, 2011, the Examiner maintained her rejection of claims 1-21 under 35 U.S.C. §§ 102(e) as being anticipated by Siegel (U.S. Patent No. 7,923,500) as evidenced by the evidentiary reference (ZnO tech sheet -nanophase Technologies).

In response, on November 28, 2011, a reply after final was submitted arguing, among other points, that the cited reference of Siegel is silent about a non-linear filler having a homogeneous structure and that claim 1 differs from Siegel in that it covers a non-linear filler as homogeneous powder, the powder being dispersed in a polymer matrix, where the homogeneity structure of the ZnO powder is a key point for the electrical properties of the material.

On December 9, 2011, the Examiner issued an Advisory Action indicating that the November 28, 2011 Reply was not sufficient to overcome the rejection, arguing that the Examiner takes the position that the powder is non-agglomerated and individual nanoparticles are coated, indicating that the ZnO is present in distinct grains, or nano-particles, meeting the claimed element of a homogenous powder.

In the present Amendment, Applicants begin by amending claim 1 such that the

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arrangement of claim 1 is directed to an electric field control material including a polymer matrix in which is dispersed a non-linear filler having non-linear electric resistance properties, wherein the non-linear filler homogenously dispersed in the polymer matrix, and where the non-linear filler includes at least 97% by weight of zinc oxide as a homogeneous powder, and less than 3% by weight of at least one metal oxide as traces.

In this arrangement the non-linear filler is homogenously dispersed in the polymer matrix. Such an arrangement is supported by at least lines 19-20 of page 15 and lines 4 and 9 of page 16 of the specification as filed.

Applicants respectfully submit that the cited prior art of Siegel does not show this feature. For example, Applicants note that in Siegel, the nano-composite (ZnO) is distributed heterogeneously in a polymer matrix. See abstract and Example 1 in columns 9-11 which suggests advantages of heterogeneous distribution.

For at least this reason, Applicants submit that Siegel does not show all of the features of independent claim 1 and request that the rejection of this claim be withdrawn. As claims 2-21 depend from claim 1, the rejection of these claims should be withdrawn for at least the same reason.

Separately, Applicants have added new dependent claims 22 and 23, which includes the features of the non-linear filler being a filler composed of micro-particles (claim 22) where the filler is composed of particles with an average diameter superior to 1 μm (claim 23).

Support for these new claims may be found at least on pages 14, 15 and 20 of the specification as filed (where ZnO « PCF 78839 » has an average diameter of the particles = 25 μm ; where ZnO « KB » has an average diameter of the particles = 7.6 μm ; where ZnO « Cerox-506 » has an average diameter of the particles = 2.9 μm ; and where ZnO « Panreac PA-ACS »

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has an average diameter of the particles = 3.3 μm).

Applicants respectfully submit that, in the art, the mechanical and electrical behaviors of nanoparticles, or particles with average diameter less than 1 μm , and of microparticles, or particles with average diameter more than 1 μm , are very different. The cited prior art of Siegel only teaches particles with nanometer measured average diameters. Figure 1 of Siegel does show a “300 nm *micron* particles” but such particles would be *nano* particles as they have an average diameter less than 1 μm .

For at least this additional reason, Applicants submit that Siegel does not show all of the features of new dependent claims 22-23 and request that the existing rejections not be carried over to these new claims.

In view of the foregoing, Applicants respectfully submit that pending claims 1-23 are in condition for allowance, the earliest possible notice of which is earnestly solicited. If the Examiner feels that an interview would facilitate the prosecution of this Application she is invited to contact the undersigned at the number listed below.

Respectfully submitted,
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